PATENT SPECIFICATION (11) 1587317

1587317

(21) Application No. 47223/77 (22) Filed 14 Nov. 1977 (19)

(23) Complete Specification filed 30 May 1978

(44) Complete Specification published 1 April 1981

(51) INT. CL.³ B26B 21/54 21/22

(52) Index at acceptance

B4B 33B2 33D1 33E 34F 36E

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(54) SAFETY RAZORS

(71) We, THE GILLETTE COMPANY, a Company organised and existing under the laws of the State of Delaware, United States of America of Prudential Tower Building, Boston, Massachusetts 02199, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to safely razors, and to blade units for use in safety razors.

More particularly, the invention is concerned with razors of the twin blade type, in which two blade members, each having a cutting edge, are arranged with their cutting edges parallel with each other and offset so as to act in tandem upon the skin of the user.

In twin blade arrangements as presently marketed, the two blades are permanently set in a plastic support structure which provides a blade platform, cap and guard portion and coupling rails by which the assembly can be detachably mounted on a razor handle, the assembly (or cartridge) being discarded as a whole when the cutting edges become dulled. In these known assemblies, a metal spacer is interposed between the two blade members, and these three metal components are clamped in the plastics support structure by studs or pins fast with, say, the cap of the unit and which pass through holes in the blades and spacer and in the blade platform, the pins then being headed to rivet the various components together.

The present inventon provides a somewhat simplified construction which permits the number of individual components to be reduced. The invention is particularly applicable to the production of disposable razors, but is also applicable, if desired, to disposable cartridges of the form described above.

In accordance with the present invention, there is provided a blade unit for incorporation in a shaving head for a safety razor, comprising a metal spacer and a pair of blades secured directly and permanently to opposite faces of the spacer, the spacer being formed integrally with projecting means facilitating attachment of the unit to a shaving head.

The "shaving head" may be the head of a razor handle, or a disposable cartridge for attachment to such a handle.

In each of the embodiments described below, the metal spacer has tabs projecting at each end of the blades, these tabs being permanently deformed to secure the unit in a shaving head.

Such a unit lends itself readily to simple handling and assembly in the shaving head.

In one embodiment, the razor head comprises a unitary moulding shaped to have a cap portion spaced by an open sided slot from the blade platform to permit insertion of the blade members through the open side of the slot, and the assembly is completed by turning the projecting tabs over the ends of the blade platform.

In a second embodiment, the blade unit consists of a unitary sheet metal member folded to define two parallel slots to receive the respective blades, and an integral cap. The two blades are directly secured in their respective slots and the blade unit is attached by projecting tabs on to a razor head including a blade platform and guard member.

Two forms of blade unit and razors incorporating them will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 is an exploded perspective view of one blade unit and co-operating razor handle;

Figure 2 is an end view of the assembled razor;

Figure 3 is a cross-section of the blade unit on the line A—A of Figure 1;

Figure 4 is an exploded perspective view of a second form of blade unit and co-operating razor handle;

Figure 5 is a cross-section of the blade unit taken on the line A'—A' in Figure 4, and

Figure 6 is an end view of the assembled razor of Figure 4.

The blade unit shown in Figures 1 to 3 comprises a pair of blade members 1 and 2 secured by rivetting to opposite sides of a spacer 3 formed by a rectangular strip of

readily deformable metal, such as soft aluminium or aluminium alloy, the projecting ends 4 of which constitute deformable securing tabs. The spacer is pierced from each side to form two rows of holes 6, so that a projecting tubular boss is formed on the axis of each hole. Each blade member has four holes to register with one row of holes in the spacer and is secured to the spacer by engaging the holes over the respective tubular bosses and forming heads 7 on the bosses, which thus form tubular rivets integral with the spacer.

The razor handle is formed as a unitary injection moulding of plastics material comprising a stem 10 and a transverse head 11 shaped to provide a blade platform 12, a guard 13 and a cap portion 14 spaced from the blade platform by a slot open along its front side and its ends to receive the blade unit. The confronting surfaces of the blade platform and cap are slotted at 15 to accommodate the rivet heads 7, these surfaces otherwise providing a snug fit for the blade unit. When the unit is fully home in its slot, the ends 4 are turned down to engage in recesses 16 in the ends of the platform and turned under to secure the blade unit in position in the head and thus complete the assembly.

In the razor shown in Figures 4 to 6, the two blade members 1 and 2 are received in forwardly facing slots formed in a sheet metal pressing 20, again of readily deformable metal, the pressing being of flattened W-form to have a bottom wall 21, a double intermediate wall 22, a top wall 23 and a cap 24 formed by folding rearwardly the forward edge of the top wall.

The blades each have one or more cut-outs or holes 26 through them. In the initially folded condition of the pressing 20, the blades are slipped into the slots formed to either side of the spacer 22 and the assembly is then completed by rolling or swaging down the pressing, to the rear of the cap 24 to thin out the sheet metal locally and upset metal from the four walls into the holes 26 in the blades to secure the blades in position.

The pressing has projecting end portions 27 destined to form securing tabs for the blade unit.

The razor again comprises a unitary injection moulding having a stem 31 and head 32 comprising a blade platform 33 and guard 34, the platform having an upstanding flange 36 at its rear edge and a pair of end abutments 37 at the ends of the guard. The unit is located against the flange 36 and the abutments 37, and is secured to the platform by turning the end portions 27 downwardly into recesses 38 and under the blade platform to complete the assembly.

In both embodiments, we prefer to set the spacing of the blade edges from the guard 13 or 34 by engagement of the forward edges of the tabs 4, 27 against the rearwardly facing surfaces at the forward edges of the recesses 16 or 38.

WHAT WE CLAIM IS:—

1. A blade unit for incorporation in a shaving head for a safety razor, comprising a metal spacer and a pair of blades secured directly and permanently to opposite faces of the spacer, the spacer being formed integrally with projecting means facilitating attachment of the unit to a shaving head.

2. A blade unit according to claim 1, wherein the spacer is formed at opposite ends with projecting tabs which constitute the projecting means.

3. A blade unit according to claim 1 or 2, wherein the blades are formed with apertures and the spacer is shaped locally to extend through the apertures to secure the blades.

4. A blade unit according to claim 3, wherein the spacer consists of a strip of metal which is pierced to form through holes each having a tubular boss projecting from one surface of the spacer, at least two such bosses being formed on each surface, and the blade apertures locate over the respective bosses, which are headed to retain the blades to the spacer.

5. A blade unit according to claim 4 and substantially as herein described with reference to Figures 1 and 3 of the accompanying drawings.

6. A blade unit according to claim 1, 2 or 3, wherein the spacer is formed by a single piece of sheet metal folded to define two parallel slots to receive the respective blades, with a double thickness of the sheet material between the blades, and also to define a skin engaging cap portion overlying the blades.

7. A blade unit according to claim 6, wherein the blades are apertured and are secured in their respective slots by locally upsetting the sheet metal to project into the apertures.

8. A blade unit according to claim 7, substantially as herein described with reference to Figures 4 and 5 of the accompanying drawings.

9. A shaving head comprising a blade platform including a skin engaging guard portion, and a blade unit according to any preceding claim attached to the blade platform.

10. A shaving head according to claim 9, formed as an integral moulding shaped to have a cap portion spaced from the platform by an open sided slot in which is located a blade unit according to any one of claims 1 to 5.

11. A shaving head according to claim 9, wherein the blade platform is exposed from above and has mounted thereon a blade unit according to any one of claims 6 to 8.

12. A shaving head according to claim 9, 10 or 11, wherein the blade unit has tabs projecting from opposite ends thereof, the forward edges of the tabs, closer to the cutting edges of the blades, engaging rearwardly facing locating surfaces of the blade platform to locate the blade unit relative to the guard portion of the blade platform.

13. A safety razor or a disposable cartridge for a safety razor, substantially as herein described with reference to Figures 1, 2 and 3, or Figures 4, 5 and 6 of the accompanying drawings.

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Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon) Ltd.—1981. Published at The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.

1587317 COMPLETE SPECIFICATION

2 SHEETS *This drawing is a reproduction of the Original on a reduced scale*

Sheet 1

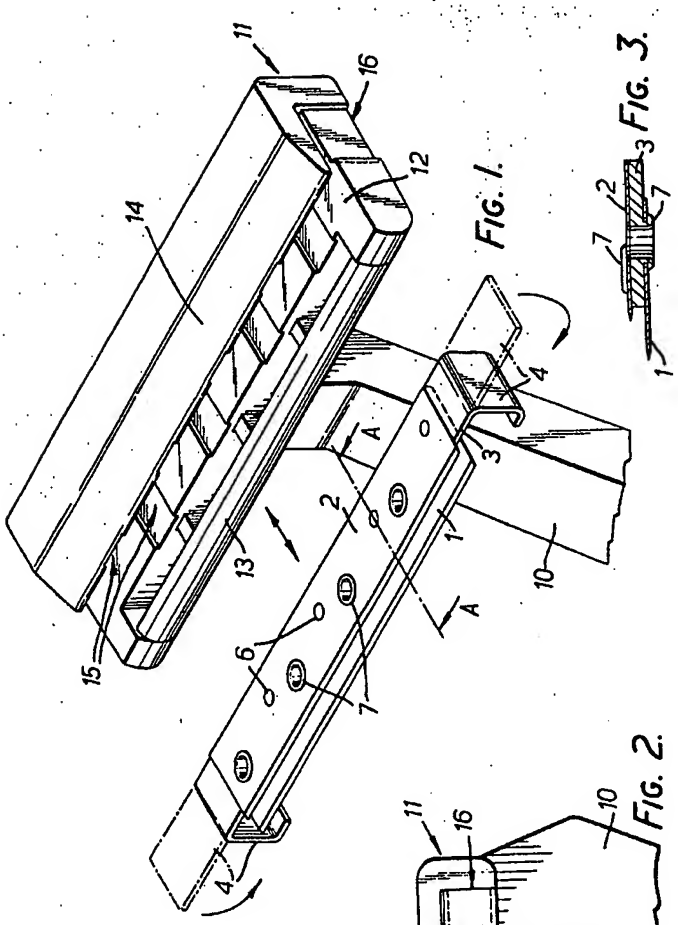

FIG. 1.

FIG. 3.

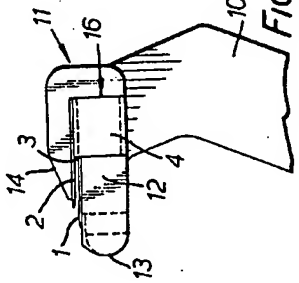

FIG. 2.

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Sheet 2

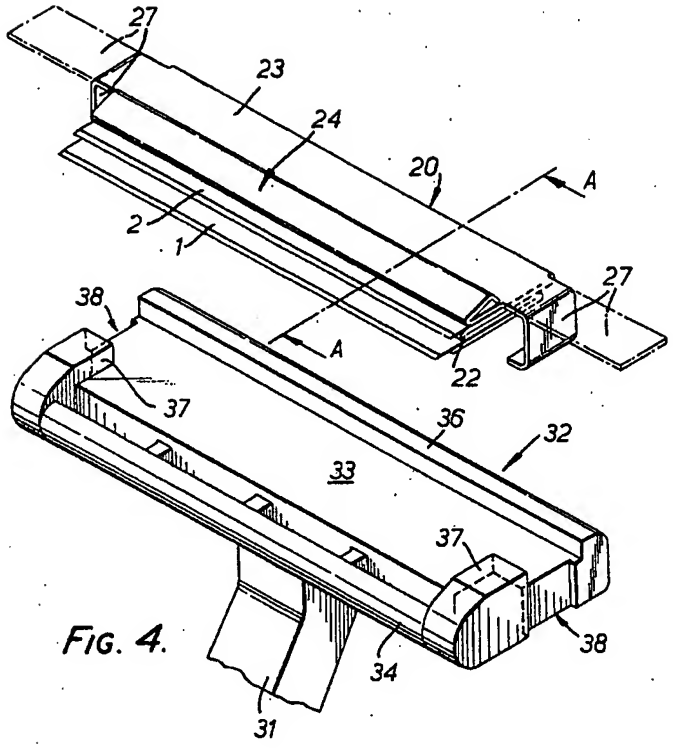

FIG. 4.

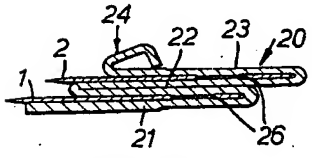

FIG. 5.

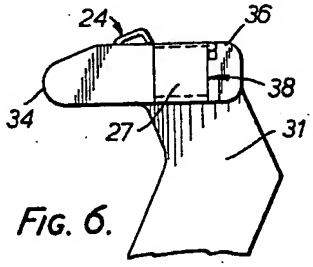

FIG. 6.